

BIG JOHNSON OPEN SPACE MASTER PLAN

- A RESOURCE MANAGEMENT GUIDE -



Prepared by

**Colorado Springs
Parks, Recreation and Cultural Services**

with

ERO Resources Corporation

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The *Big Johnson Open Space Master Plan: A Resource Management Guide* was collaboratively developed by the Big Johnson Master Plan Team and key stakeholders. At its foundation, the Plan emphasizes protection of natural resources, which was a key concern of the Master Plan Team, stakeholders, and the general public.

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SUMMARY

The ***Big Johnson Open Space Master Plan: A Resource Management Guide*** (“Plan”) is a translation of the Big Johnson Master Plan Team’s vision for an area of outstanding mixed grass prairie. The Plan, based on the best available information, provides a comprehensive assessment of existing conditions and is a framework for the protection of natural, visual, and passive recreational resources for Big Johnson Open Space.

The *Introduction* presents a number of ecological and community goals that provide the philosophical basis for the development of current and future management actions for Big Johnson Open Space. These broad goals are further defined in the accompanying resource sections, which contain goals and objectives that will help guide future decisions. For every objective, there are several recommended actions that will help fulfill the goals and objectives. Some of the goals, objectives, and recommended actions formalize existing maintenance practices in the City’s Parks, Recreation, and Cultural Services Department. Others suggest a substantive change in long-term direction and will require more specific site plans and design work to implement.

One of the challenges inherent in crafting and adopting a plan is that circumstances and opportunities shift and change quickly. The population and demographics of the Colorado Springs region are changing rapidly. Therefore, this Plan is intended to be a dynamic tool for a dynamic situation. The Plan is to be used as a guide to action in the immediate future, as well as over the long term. As with any working document, it should be updated and revised regularly and as needed.

Concurrent with the implementation of the Plan is the understanding that additional staff dedicated to on-the-ground management will be necessary. An important first step is to build internal financial and staffing capacity to act proactively toward protecting Big Johnson Open Space’s natural, visual, and recreational values, and to respond creatively to unexpected opportunities. Added capacity will also increase the likelihood that the other ambitious goals of this Plan will be realized with a spirit of stewardship, conservation, and conscientious use of the Colorado Springs natural landscape.

INTRODUCTION

LOCATION AND BACKGROUND

Big Johnson Open Space consists of 646 acres located southeast of Colorado Springs along Powers Boulevard, adjacent to the Big Johnson Reservoir and south of the Colorado Springs Municipal Airport (Figures 1 and 2). The property provides important wildlife habitat and acts as a community buffer. In the fall of 2000, the Trust for Public Land purchased the Big Johnson property from Cygnet Land, LLC and then conveyed the property to the City of Colorado Springs. The City used funds from its Trails, Open Space, and Parks (TOPS) sales tax and a grant from Great Outdoors Colorado (GOCO) to acquire the property.

PURPOSE OF THE PLAN

The purpose of the Plan is to provide specific management direction for natural, visual, and passive recreational resources for the property. This Plan is based on the best available information, and provides a foundation for long-term adaptive management of the property and its resources.

VISION STATEMENT

Big Johnson Open Space represents a unique prairie remnant and is the City of Colorado Springs' first open space acquisition of a grassland area. The property serves as a community buffer and aesthetic resource for the cities of Colorado Springs, Fountain, and Security, maintaining outstanding views of Pikes Peak and the Front Range. This area will provide valuable habitat for numerous wildlife species including migrating waterfowl and shorebirds. Big Johnson Open Space also provides a critical area of prairie in the City's open space system while allowing for limited public access.

GOALS

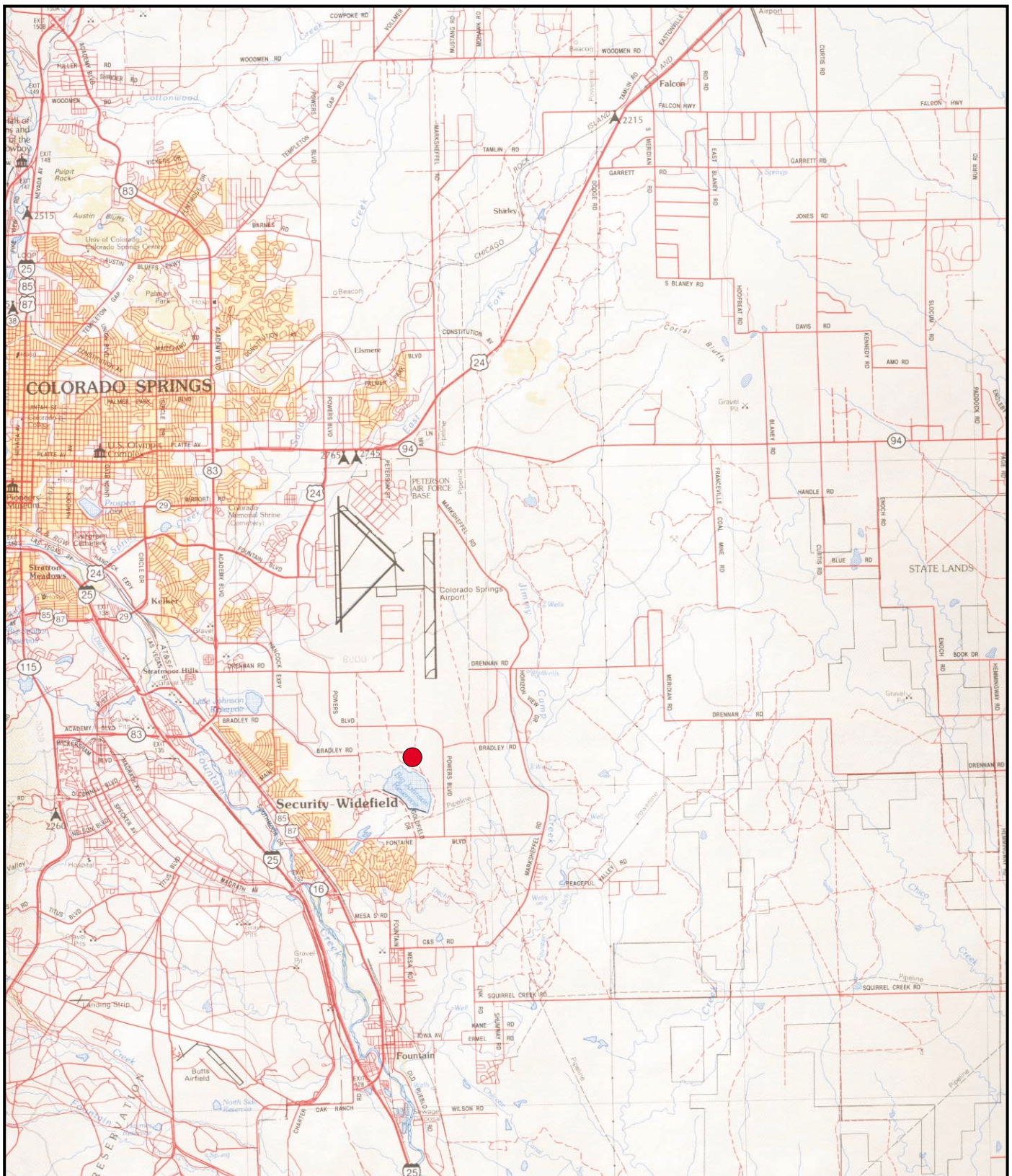
Preliminary goals for the Big Johnson Open Space provide a philosophical foundation on which to base the Plan. These broad ecological and community goals will provide the basis for management actions related to issues such as grassland preservation, weed management, restoration, wildlife, visitor use, passive recreation, environmental education and interpretation, and visual resources.

Ecological Goals

1. Manage the property to enhance regional conservation efforts.
 - Preserve and protect the conservation values of the property as described in the *Existing Conditions Report*. These values identified Big Johnson as important for conservation because it is a—
 - a. Natural area and contains significant wildlife habitat.
 - b. Good example of mixed grass prairie.
 - c. Community separator.
 - d. Visually significant area along the Front Range.
 - e. An area that supports migrating waterfowl and shorebirds.
 - Protect and enhance native vegetation.
 - Protect wildlife habitat and movement corridors.
 - Restore degraded plant communities on the property.
2. Promote the conservation and restoration of natural communities.
 - Provide educational and interpretive activities and programs where opportunities exist.
 - Provide passive recreation activities that do not degrade the conservation values of the property where opportunities exist.

Community Goals

1. Maintain the open space as a buffer to the greater Colorado Springs area.
 - Promote the conservation of adjoining open lands to contribute to a larger protection of an important grassland area.
 - Maintain a positive relationship with adjacent landowners and the surrounding communities.
2. Promote educational programs and recreational activities where appropriate.
 - Create an environmental education program that uses interpretation as part of the overall effort to preserve the property's natural resources.
 - Continue to support implementation of regional trail opportunities.
 - Explore the possibility of a trailhead and ancillary facilities on the property.



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● Big Johnson Open Space

Figure 1
Regional Setting

1 inch = 2.5 miles



Figure 2. Local Setting

AREA DESCRIPTION

Located in a bowl-shaped valley, the Big Johnson Open Space commands views of the Front Range and Pikes Peak to the west and mixed grass prairie to the east. The Big Johnson Reservoir defines the base of the valley and lies adjacent to the property. Grassland covered ridges slope gently down from the north, east, and south to the reservoir. A few cottonwoods are visible north of the reservoir but the majority are located along the irrigation canal and Cruse Gulch, outside of the property. Ecologically, the landscape surrounding and including Big Johnson Open Space is dominated by mixed grass prairie. The dominant species include blue grama, buffalo grass, sideoats grama, big bluestem, little bluestem, sleepygrass, and green needlegrass. Intermixed with the grasses are a wide variety of wildflowers including wavyleaf thistle, silver sage, prickly poppy, scarlet gilia, and Easter daisy. Sagebrush, yucca, and rabbitbrush add additional structure to the grassland. The composition and condition of the present plant communities is determined primarily by the historic land use, soils, and precipitation.

The Big Johnson Open Space is located in unincorporated El Paso County just ten miles southeast of downtown Colorado Springs. The Colorado Springs metropolitan area is situated at the foot of Pikes Peak and the Pike National Forest within the foothills transitional zone. Elevations across this varied topography range from 5,800 feet in the east to over 14,000 feet at the top of Pikes Peak. The area's natural beauty and growing economy continue to attract new residents each year. The population of Colorado Springs metropolitan area was 520,000 people in 2000 and is projected to have over 700,000 people in 2020, a 35 percent increase. From 1990 to 2000, the population of Colorado Springs proper grew 29% from 280,430 to 360,890 (DOLA 2002).

This population growth poses a threat to the greater Colorado Springs' natural environment. As a result, the citizen-initiated TOPS program was developed to preserve open lands, parks, and trails within the Colorado Springs metropolitan area. The acquisition of the Big Johnson Open Space by the TOPS program in cooperation with GOCO is part of this effort.



HOW TO USE THE PLAN

The *Big Johnson Open Space Master Plan: A Resource Management Guide* is a working document, which should change and evolve with the property. As Colorado Springs implements recommended actions, and as objectives and goals change, the Plan should reflect those changes. The Plan should be used to—

1. Understand the overall goals for Big Johnson Open Space and ensure that all actions support those goals.
2. Understand the specific resources of the Big Johnson Open Space (see *Existing Conditions Report* in Appendix A and the *Resource Management* section).
3. Create a foundation for individual resource management plans recommended in the *Resource Management* section.
4. Guide priorities (see management action recommendations for each resource in the *Resource Management* section).
5. Monitor the status of resources on the Big Johnson Open Space (see *Existing Conditions Report* in Appendix A and monitoring recommendations in the *Resource Management* section).
6. Provide a blueprint and direction for development of physical improvements on the Big Johnson Open Space.

Planning Process

Colorado Springs retained ERO Resources to assist in the development of the Plan. ERO was responsible for undertaking the planning process. The first step in the planning process began with the *Existing Conditions Report*, which ERO completed in May 2001. In January 2002, ERO met with Colorado Springs Parks and Recreation staff to discuss the property, goals for its management, and particular management issues and concerns. The vision and goals for the property were refined from this discussion and presented to the Big Johnson Master Plan Team (Team) at a working session in February 2002. The Team was composed of representatives from the TOPS working committee, the Parks and Recreation advisory committee, City staff, and concerned citizens. At the working session, members of the Team, Colorado Springs staff, and ERO discussed management concerns and issues. These concerns and issues were then presented to a group of Big Johnson stakeholders in March for further review. Information obtained from these two working sessions provided the basis for the public process and the *Resource Management* section of the Plan.

Plan Guidance

Colorado Springs has established some guidance on open space acquisition, management, and planning. ERO used these existing policies to help shape the Plan. Policies and goals relative to the visual environment, open space, and natural resources translate into specific management actions. The *Colorado Springs Open Space Master Plan* (Colorado Springs 1997), *El Paso County Parks, Trails, and Open Space Master Plan* (EDAW 1996), and TOPS policies and ordinances (TOPS 1997) are the principal planning documents that provide guidance for this Plan. Policies and goals relevant to the Big Johnson Management Plan are presented here.

Policies from the TOPS Policies and Procedures Manual

General Provisions

- To establish a trails, open space and parks program to acquire real property in the City and El Paso County by various types of actions when determined by the City Council, acting pursuant to authority set forth in this ordinance to be necessary to preserve such areas;
- To acquire mineral and fuel resource rights in order to protect the visual, geological and biological surface features of open space lands and trails;
- To acquire rights-of-way and easements for access to open space lands and trails and to build and improve such access ways and trails;
- Conservation of new open space lands shall be related to resource management including but not limited to water improvements (irrigation, domestic use and recreational use), preservation enhancements (fences, wetlands and wildlife habitat improvements), and passive recreational uses, such as trails, trailhead parking and other access improvements, and restrooms;
- To manage, patrol, improve and maintain all new open space lands and trails acquired with revenues generated by a sales and use tax approved by the electorate pursuant to this ordinance in accordance with the purposes set forth in this ordinance;
- To permit the use of the funds generated by the approved sales and use tax for the joint acquisition of new open space lands between the City and the County of El Paso and neighboring counties, recreational districts or with other governmental entities or land trusts, or with private individuals, corporations or entities, as would benefit the citizens of the City.

Open Space Functions

- Linkages and trails
- Preservation of fragile ecosystems, natural areas, scenic vistas and areas, fish and wildlife habitats and corridors, or important areas that support bio-diversity, natural resources, significant land formations and landmarks, and cultural, historical and archeological areas;
- Creating spatial definition of and between urban areas;
- Conservation of natural and visual resources, including but not limited to forest lands, range lands, agricultural land, aquifer recharge areas, and surface water;
- Preservation of land for educational opportunities and outdoor recreation areas limited to passive recreational use, including but not limited to hiking, photography or nature studies, and if specifically designated, bicycling, horseback riding or fishing.

Trail Functions

- Hiking, walking or jogging
- Recreational or commuter bicycling; and
- Horseback riding.

Policies from the Colorado Springs Open Space Master Plan

Airport/Big Johnson Candidate Area

- The combined resource could serve as an outdoor recreation area and open space buffer between Colorado Springs and Fountain.

Open Space

- Promote the protection, enjoyment and appreciation of the natural environment including recreation in a natural setting, environmental education, and the protection of significant scenic features.

Policies from the El Paso County Parks, Trails, and Open Space Master Plan

Open Space

- Protect areas with important environmental, cultural, historic or visual resource values.
- Emphasize protection over public access.
- Minimal or no development.

Big Johnson Reservoir

- Develop for passive recreation and include walking trails and wildlife observation areas.
- Lands surrounding the reservoir support habitat for a variety of grassland species, including pronghorn antelope.

EXISTING CONDITIONS

While goal setting provides a philosophical foundation for the Plan, the existing conditions report provides the physical foundation. An existing conditions report includes an examination of the property's history, its features, and natural, cultural, historical, and recreational resources. ERO completed the *Existing Conditions Report* in May 2001. This identified the conservation values and management issues of the property.

CONSERVATION VALUES

Conservation values are the site features, including natural, cultural, and scenic resources that make the property valuable for inclusion in the Colorado Springs open space system. Big Johnson Open Space has scenic and ecological value.

Scenic Value

The property provides a community separator between Colorado Springs, Fountain, and Security. The property affords outstanding views of Pikes Peak to the west, open mixed grass prairie to the east, and the riparian habitat of Cruse Gulch to the south. Big Johnson Open Space is one of the few areas east of Colorado Springs where a view to the mountains is not obscured by the City's skyline. The property offers undisturbed views, a diminishing amenity in the region.

Ecological Value

Big Johnson Open Space is part of a significant regional grassland area that provides habitat for many species of plants and animals. A portion of Big Johnson contains remnants of tallgrass prairie consisting of big bluestem. The Colorado Natural Heritage Program (CNHP) identified three important conservation areas near the property that make up the Big Johnson Reservoir Potential Conservation Area (see *Appendix A*). These areas support at least three occurrences of wintering bald eagle, numerous migratory birds, and Arkansas darter, a candidate species for listing as federally threatened. The Big Johnson Open Space itself provides habitat for a number of significant species including black-tailed prairie dog, pronghorn antelope, red-tailed hawk, grassland songbirds, and various migratory shorebirds.

MANAGEMENT ISSUES

Management issues are specific occurrences or situations, such as adjacent land practices, visitor use, or noxious weed infestations that can compromise the conservation values of the property. Based on the *Existing Conditions Report* and the planning process, management issues for Big Johnson Open Space are listed below and addressed in detail within the *Resource Management* section.

- Grassland preservation and management
- Visitor use
- Law enforcement
- Big Johnson Reservoir
- Wildlife management
- Adjacent land uses
- Domestic pet and wildlife conflicts
- Scenic viewshed and community separator protection
- Bradley Road extension

RESOURCE MANAGEMENT

ECOLOGICAL LANDSCAPE AND PRESERVATION

One of the major goals of the TOPS program is to protect fragile ecosystems that support biodiversity. In the context of biodiversity, there are five levels of organization commonly considered: genetic, species, community, ecosystem, and landscape or regional (Noss and Cooperrider 1994). Big Johnson Open Space is an ecosystem fragment including a unique remnant of a once dominant Front Range habitat consisting of native mixed grass prairie. The property supports a number of important wildlife species such as the black-tailed prairie dog, red-tailed hawk, and pronghorn. The concept of an ecosystem fragment is an important concept to understand when approaching resource management decisions. Historically, grasslands coevolved with various disturbance regimes such as fire and large-scale grazing. Fires worked at the landscape level and faced very few impediments. Large numbers of bison, pronghorn, and black-tailed prairie dogs roamed freely across the vast grasslands, in search of plentiful forage. As humans have populated the region, aggressive fire suppression and habitat fragmentation have substantially altered the landscape and ecological processes. This trend continues today and adjacent land use will likely impact ecological features of the property directly and indirectly. Development or poor management of the surrounding landscape could compromise the ecological value of the property, reducing it to an island of protection rather than a component of a greater ecological whole.

When viewed on a community or species level the property provides a valuable refuge for many species. For example, the pronghorn is a prominent species of grassland communities. If future development obstructs open grassland corridors, pronghorn may become extirpated from the property. The Big Johnson Open Space may provide a critical open space preserve within an area of increasing residential and commercial development.

VEGETATION

Big Johnson Open Space is dominated by an expanse of mixed grass prairie, a blend of the vegetation of the tallgrass and shortgrass prairies with the richest floristic complexity of all the central plains region grasslands. Dominant species include blue grama (*Chondrosum gracile*), buffalo grass (*Buchloe dactyloides*), sideoats grama (*Bouteloua curtipendula*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), sleepygrass (*Achnatherum robusta*), and green needlegrass (*Nassella viridula*). Intermixed with the grasses are a wide variety of wildflowers including wavyleaf thistle (*Cirsium undulatum*), silver sage (*Artemisia frigida*), prickly poppy (*Argemone polyanthemos*), scarlet gilia (*Ipomopsis aggregata*), and Easter daisy (*Townsendia hookeri*). Sagebrush (*Artemisia* sp.), yucca (*Yucca glauca*), and rabbitbrush (*Chrysothamnus* sp.) add additional structural components to the grassland.

Upland areas directly adjacent (see Figure 4, of the *Existing Conditions Report* in *Appendix A*) to the reservoir contain a significant component of introduced grasses, especially smooth brome (*Bromopsis inermis*), weedy species such as curly dock (*Rumex crispus*), and at least two State-listed noxious weeds; Canada thistle (*Breca arvensis*) and musk thistle (*Carduus nutans*). This disturbed grassland community is primarily a result of fluctuating reservoir levels coupled with overgrazing by cattle near the water source. In addition, there is a large infestation of common teasel (*Dipsacus fullonum*) along the reservoir dam. Common teasel is a species classified as, “not yet widespread or causing great economic impact within the State of Colorado.” However, counties and local advisory boards are encouraged to contain and eradicate these species before they proliferate and significantly impact the economic and environmental values of Colorado’s lands (DPI 2002).

Fire Management

Fire, whether set or caused by lightning, has been a part of the prairie for thousands of years. Fire provides one or more benefits to a prairie. It can remove dead vegetation that hinders new growth; it can release nutrients to enrich the soil; it can reduce invader plants and encourage native species; and, it can create habitats attractive to wildlife. The significance of fire in natural grasslands has been well established. Frequent, light fires on bluestem grasslands, for example, result in an increase in biomass and may also stimulate flower production. When fire is suppressed from these grasslands, native species may lose their competitive edge.

The frequency of burning is a crucial factor in maintaining the abundance of certain grassland types. Hadley and Kieckhefer (1963) found that with only a year or two of no burning, the effects of past fire-stimulated increases in productivity disappear. Kucera and Koelling (1964) found similar responses of bluestem populations to fire frequency. Annual burning of bluestem grasslands resulted in increases in bluestem cover. Biennial burning

decreased bluestem's competitive vigor due to the effects of increased litter. Burning every fifth year resulted in conditions similar to grass populations on unburned areas.

Native warm-season grasses evolved with fire, are well adapted to tolerate it, and respond to the improved growing conditions that follow fire. They may be managed without periodic burning but they will struggle against exotic and native weeds, tree invasion, and accumulations of their own litter. Following spring burning, the soil is warmer and drier resulting in earlier and more rapid growth. Summer burns, in effect, are similar to haying and brief, close grazing. They rarely cause long-term damage unless conditions are very dry at the time of a burn. Fall and winter burns may create dry, and crusted soil conditions which can reduce total grass production. This may not be desirable for forage production but may improve wildlife habitat, aesthetic or landscape plantings in which extremely tall grasses and heavy grass production is not warranted.

Historically, fire was a landscape-level process. During very dry years, for example, fires likely impacted entire ecoregions. In some areas, fires were impeded only by natural fire breaks or moisture. Today, however, fire no longer operates at such a broad scale. Although aggressive fire suppression and prevention have caused significant changes in natural fire regimes, the loss of fire as an ecological process has been due to habitat fragmentation by human land uses. On Big Johnson Open Space where a small remnant of natural vegetation remains, fires are unlikely to ignite or ignite frequently enough to prevent changes to the community structure, function, or composition.

Because fire no longer operates at the scale of the regional landscape and because substitutions for fire are limited, prescribed burning is necessary for the maintenance of fire-dependent and fire-maintained species, communities, and ecological systems. For successful prescribed burning, it is necessary to understand the fire regime at a particular site.

Attributes of a fire regime include:

- fire type (e.g., surface fire, ground fire)
- fire return interval
- fire behavior
- burn severity
- timing
- fire size and pattern

Prescribed burning commonly fails to incorporate enough variability in these fire regime attributes. For example, fire return intervals are usually not varied or the size and pattern of prescribed burns are generally not varied. Related to the lack of variability in fire regime attributes is the need to distinguish between management for restoration and management

for grassland maintenance. Restoration generally involves focused burning with a very specific objective (e.g., Canada thistle control), whereas grassland maintenance requires more variability.

In the long term, Colorado Springs Parks and Recreation should consider the use of prescribed fire to maintain the health of the grassland. Burning does not need to be performed at an extremely large scale, but could be very effective for grassland maintenance in burn units set up as either strips of 200 to 300 feet or areas of 10 to 15 acres. Variable and frequent prescribed burns could also provide valuable training opportunities for local fire departments.

Grazing Management

Like fire, grazing greatly influences the structure and composition of grassland communities. Herbivores interact with soils, plants, other animals, and other processes to produce unique successional patterns in the landscape at multiple scales. These spatial and temporal patterns create the habitat mosaics within which grazing-adapted species and communities exist.

Sound grazing management to maintain grassland biodiversity requires a combination of art and science. As with prescribed burning, the more emphasis that is placed on grazing to achieve a biological objective, the less it is an ecological process and the more it is a management tool. Big Johnson Open Space and the surrounding region have been significantly modified from historic conditions. According to Valentine (2002), the property has been used historically for summer grazing. An indication of this summer grazing is that blue grama as a sod form dominates several areas of the property. Blue grama is a bunchgrass that forms a sod under heavy grazing. Given the history of grazing on the property, the Big Johnson Open Space would benefit from a brief period of rest from grazing (approximately three years). This resting period will allow certain grass species such as the bluestems and sideoats to grow more profusely, thus contributing to the overall biodiversity of the property. Historically, the growth of these species was limited by summer cattle grazing.

If grazing management is to be used to achieve objectives on the property, certain principles of grazing management must be observed. These include determining the appropriate:

- number of grazing animals
- distribution of grazing animals
- timing of grazing



These ultimately are determined by the conservation goals, forage resources, and the manager's objectives. Grazing management is most effective at producing desired conditions at the landscape scale. Grazing does affect smaller-scale phenomena such as within-community light, moisture, and nutrient availability; but management influence is relatively low in native rangeland situations at this finer scale. Larger sites allow more flexible grazing management, and have the potential to accommodate a variety of species and community grazing requirements. From this perspective, it is important to consider grazing on Big Johnson Open Space within the context of other nearby rangeland available for lease. Potential future grazing on the property should require specific goals and objectives established from inventory and monitoring information. A resource inventory should be completed and monitoring program developed in order to maintain grassland conditions on Big Johnson Open Space.

In the long term, Colorado Springs Parks and Recreation may want to consider either short, intense grazing of the property and/or using prescribed burns to maintain the health of the grassland. Grazing mimics a component of the natural disturbance process by stirring the seed bed; however, cattle can act as dispersal mechanisms for noxious weeds and require adequate monitoring.

Noxious Weeds

Noxious weeds threaten native plant communities by displacing desirable native species. Alien plants that are highly invasive usually do not have natural pathogens and predators to keep their populations under control. Some non-natives, like diffuse knapweed (*Centaurea diffusa*), contain allelopathic chemicals, which can suppress the growth of other species and allow diffuse knapweed to grow in single-species stands (Watson and Renney 1974).

Integrated Weed Management

The Colorado Weed Management Act of 1990 identifies both Statewide and County-wide noxious weeds and obligates all Colorado counties to use Integrated Weed Management (IWM) techniques to control them (Table 1). When used together, these techniques are the least harmful and most beneficial methods for weed control.

Table 1. Integrated weed management (IWM) techniques.

TECHNIQUE	DEFINITION
Mechanical	Physical removal by mowing, mulching, tilling, prescribed burning, grazing or hand pulling.
Cultural	Enhancement of the native plant community using fertility management or re-vegetation.
Biological	Releasing a weed's native natural enemies using insects, grazing animals or disease.
Chemical	Destroying weeds using herbicides that do not adversely affect the desired plant community.

The TOPS program accomplishes noxious weed control through the Parks, Recreation, and Cultural Services Department, which uses an integrated pest management approach to weed control. Integrated pest management is a decision-making process that selects, integrates, and implements control methods (Table 1) to prevent or manage noxious weeds. It focuses on long-term prevention or suppression of undesirable species while reducing the impact that control techniques may have on the environment, human health, and non-target plants and animals.

The most important part of a noxious weed management program is prevention. Road shoulders, old cattle trails, trail margins, trailheads, and grasslands close to the reservoir should be surveyed annually for infestations. These should be removed before they become well established. The City of Colorado Springs should also record noxious weeds along Big Johnson Open Space boundaries and on adjacent property and notify the appropriate landowners or managers about problem plants.

Prevention will have the most significant long-term benefit for Big Johnson Open Space and surrounding areas. Vigorous and consistent prevention reduces the opportunities for dispersal of noxious weeds, which in turn, minimizes the need for future control actions. Prevention is proactive rather than reactive, and is the most cost effective management action considered in this section. Restoring and maintaining healthy plant communities and reducing human impacts and use patterns also can prevent noxious weed invasion.

The primary noxious weeds of concern present on Big Johnson Open Space are Canada thistle and musk thistle, which are listed by El Paso County and recognized in the list of top ten priority weeds for Colorado, as described in the Colorado Weed Management Act (DPI 2002). These two species pose a threat to the native grassland communities and potential

restoration efforts. In addition, diffuse knapweed, probably introduced through road construction activities, is present north of the property and is slowly moving south (Valentine 2002). Diffuse knapweed will likely pose a significant threat to the grassland community for Big Johnson Open Space and should be addressed in all future management actions (e.g., trail construction).

Riparian Areas and Wetlands

There are no riparian areas or wetlands on the Big Johnson Open Space. As adjacent lands, are developed, gulches along the property could begin to support riparian vegetation due to sheet flow from landscaping irrigation. The Big Johnson Reservoir, adjacent to the property, provides an outstanding riparian resource for a diversity of migratory birds and raptors.

Goal

Protect and enhance native vegetation communities and restore degraded plant communities on the property.

Objective

1. Implement a grassland preservation and management strategy.
2. Plan trails to minimize the risk of weed introduction and spread, and habitat loss.
3. Implement trail construction and maintenance with a weed strategy in mind.
4. Educate staff, landowners, and visitors about grassland preservation and noxious weed control.

Management Action Recommendations

Objective 1: Implement a grassland preservation and management strategy.

Action: Use a no action approach in the short term (2002-2004).

Action: Coordinate with NRCS to conduct a resource inventory in late summer 2002.

Action: Treat (burn, graze, or mow) portions of large areas on a rotational schedule to provide a mosaic of successional stages.

Action: Conduct prescribed burns at varying intervals of time (2-3 years, 4-7 years, or 8-10 years) to provide a mosaic of successional stages.

Action: Map noxious weeds infestations on Big Johnson Open Space and identify areas of concern on adjacent properties.

Action: Work with El Paso County Department of Transportation to clarify Best Management Practices (BMPs) prior to any action on the Bradley Road extension.

Objective 2: Plan trails to minimize the risk of weed introduction and spread and habitat loss.

Action: Do not place new trails in areas with existing weed infestations.

Action: Avoid creating a trail corridor that links a weed-infested area with an area of little or no weed infestation.

Action: Place any trails near grassland edges to limit the fragmentation of large blocks of habitat

Objective 3: Implement trail construction and maintenance with a weed strategy in mind.

Action: Reclaim disturbed areas immediately to reduce chance of weed infestation.

Action: Minimize ground disturbance and soil compaction resulting from construction and maintenance activities.

Action: Use weed-free materials in trail construction and maintenance.

Action: Clean all equipment used in trail construction and maintenance before it is used on a new project.

Objective 4: Educate staff, landowners, and visitors about grassland preservation and noxious weed control.

Action: Develop outreach program to assist developers and homeowners with appropriate native landscaping.

Action: Explore research opportunities in grassland preservation with schools such as University of Colorado at Colorado Springs, Colorado College, and Fountain Valley School.

Monitoring

Action: Photos should be taken of known weed infestations and compared annually to track success of control efforts.

Action: Recreational trails should be surveyed for weed infestations.

Action: Monitor thatch build-up for threat of wildfires (especially during short term).

Action: Monitor soil compaction from mowing equipment.

Action: Monitor use of cattle for impacts to ground nesting birds and as potential vectors for noxious weed dispersal.

Action: Closely monitor construction activities if Bradley Road is extended.

Action: Closely monitor potential reservoir dredging for impacts to vegetation.

WILDLIFE

The major considerations for wildlife management are maintaining grassland health (see *Vegetation*) and limiting habitat fragmentation. Habitat fragmentation can result in a loss of connectivity and species movement (Forman 1995). In the context of Big Johnson Open Space, this fragmentation could occur because of inappropriate trail design and recreation facilities. On a regional level, some level of habitat fragmentation is inevitable with future residential and commercial development. It will be important to foster relationships with adjacent landowners to protect wildlife habitat and movement corridors. As development continues around the Big Johnson Open Space, domestic pets and human-tolerant predators will become management issues for the property. Appropriate management actions taken at the community level will maintain species richness and the carrying capacity of the property. On the Big Johnson Open Space, the major species of concern identified in the Existing Conditions Report (Appendix A) include the black-tailed prairie dog (*Cynomys ludovicianus*), pronghorn (*Antilocapra americana*), red-tailed hawk (*Buteo jamaicensis*), grassland songbirds, and migratory shorebirds.

Pronghorn

A small herd of pronghorn routinely use Big Johnson Open Space for rest and forage. Generally, pronghorn require large areas of open space and are intolerant of humans. Under current plans, new residential and commercial development will emerge around Big Johnson Open Space. This development and future recreational use will likely displace the pronghorn into more remote, non-urbanized areas.

Red-tailed hawk

The red-tailed hawk populates areas from Alaska to the mountains of Panama. It prefers open grasslands or marsh-shrub habitats. Although not a true migrator, it will adjust its location depending on season and abundance of prey. A red-tailed hawk nest was identified during the site visit for the Existing Conditions Report. Red-tailed hawks are sensitive to disturbances within a 1/3 mile radius of their nest. Any human presence or disturbance within this radius will likely lead to abandonment of the nest; however, some members of this species have adapted to urbanization and may tolerate human presence to within 200 yards of the nest (Craig unpubl.).

Grassland songbirds

Grassland songbirds prefer habitats with healthy grass and thick litter cover. They can be found in shortgrass and mixed grass prairies, croplands, montane grasslands, desert shrublands, sagebrush, and cottonwood groves interspersed with grasslands (Kingery 1998).

There are two critical elements in determining appropriate nesting habitat: open views and a variety of vegetation heights. Western meadowlarks (*Sturnella neglecta*), lark sparrows (*Chondestes grammacus*), and vesper sparrows (*Pooecetes gramineus*) are examples of grassland songbirds on Big Johnson Open Space. Although they are still relatively common throughout North America, they are being threatened by habitat loss and encroachment. One of the simplest and most effective strategies for maintaining populations of grassland songbirds is to conserve native prairie and the plant and animal species found there. A number of studies have documented the effects of recreation on songbird habitat and abundance. Studies on western meadowlark, lark sparrow, and vesper sparrow are drawn on here as examples to consider for future management activities.

In a study examining the influence of recreational trails on the density of songbirds, western meadowlarks were significantly more abundant along control transects than along recreational trails (Miller et al. 1998). Abundance increased with increasing distance from trails. Meadowlarks are very sensitive to any human presence in their nesting territories and will desert a nest if disturbed during incubation (Kingery 1998). Keys to management include providing a variety of grassland types and heights, sparse woody cover, and high forb and grass cover.

Lark sparrows in Colorado preferred shortgrass and mixed-grass uplands over tallgrass remnants or hayfields (Bock et al. 1995). Keys to management include providing suitable habitat (open grasslands with sparse to moderate herbaceous and litter cover, and a shrub component) and allowing moderate grazing or occasional burning.

In Colorado, Bock et al. (1999) compared the abundance of vesper sparrows between upland (mixed-grass prairie) and lowland (tallgrass or hayfields) grasslands. Vesper sparrows were significantly more abundant on upland than on lowland plots. Bock et al. (1999) also compared the abundance of vesper sparrows between interior and edge locations. Edge was defined as the interface between suburban development and upland or lowland habitat, and interior locations were 650 feet from edge. Vesper sparrows were significantly more abundant on interior plots than on edge plots. In Colorado, the influence of recreational trails on avian abundance was evaluated in mixed-grass prairie (Miller et al. 1998). Vesper sparrows were significantly more abundant along control transects, which were placed in blocks of mixed-grass prairie without trails, than along trails.

It is important to note that each grassland species has specific habitat needs whether it is short vegetation for nesting sites or areas of tall, dense vegetation, which provides habitat for small insect prey. One of the first steps in managing for grassland bird species is to determine which species are present or could be present if the appropriate habitat conditions were available. In some cases, management recommendations for one species may

contradict the recommendations for another species. In general, management activities such as fire, mowing, and intensive grazing should be scheduled in the spring before the nesting season or mid to late summer (at least mid-July), fall, or winter. These activities during the nesting season can disrupt breeding activities, destroy nests, or expose nests and birds to predators. Prescribed burning and mowing should be conducted in such a manner as to leave some areas uncut and unburned each year, to make a variety of habitats available to birds at all times.

Migratory Shorebirds

Shorebirds are a diverse group of birds, including plovers, sandpipers, phalaropes, oystercatchers, and avocets that migrate, breed and winter throughout the world. A number of species have been observed and identified along the shoreline of Big Johnson Reservoir and associated upland areas during migration. These migratory shorebirds are often found along the Reservoir's edge in search of crayfish and other invertebrates. The most common species seen near the Reservoir include American avocet, common snipe, willets, Wilson's phalaropes, various sandpipers, semipalmated plovers, and long-billed dowitchers.

During migration, shorebirds are associated primarily with shallowly flooded coastal or freshwater wetlands or intertidal mudflats (Helmert 1992). At Big Johnson Open Space, they exploit the shoreline of Big Johnson Reservoir and adjacent grassland areas. Migratory shorebirds show differences in foraging habitat use between species in relation to water depth and vegetation structure and distribution. A range of habitat conditions ranging from sparsely vegetated mudflats to moderately vegetated open shallows provide shorebirds with required habitats throughout their annual cycle. Upland habitats associated with wetlands are also exploited by shorebirds.

The peak migration periods for shorebirds generally occur from March through May (spring) and July through September (summer/fall). During spring and summer/fall, large numbers of shorebirds may concentrate at coastal and inland staging areas. Shorebirds differ from many other neotropical migrants in that they have narrow habitat requirements that limit them to a few highly productive stopover sites (Myers et al. 1987). They use the same staging areas year after year, probably because they provide more predictable feeding and roosting areas than other sites along the migratory route (Senner and Howe 1984). Shorebirds increase in body mass up to 40 percent at these staging areas before departing, and the majority of this increased mass is the fat required to fuel their long distance migrations (Castro and Myers 1989). Because shorebirds have higher metabolic rates than non-passerines of similar size and must spend a high proportion of their daily schedule foraging for maintenance plus fat storage, the disappearance or degradation of spring stopover habitats may be detrimental to entire populations (Kersten and Piersma 1987).

Migratory shorebirds need staging areas to refuel and continue migrating. Disturbance to shorebirds at feeding, roosting and nesting sites can also have potentially serious effects on populations. In general, management for shorebirds should focus on 1) protection of natural habitats used by breeding, migrating, and wintering shorebirds, 2) reduction of disturbance, and 3) increasing the accessibility of appropriate habitats in managed wetlands (Helmers 1992). Management actions at Big Johnson Open Space should consider the temporal and spatial availability of habitats for the foraging and roosting needs of shorebirds. In addition, these needs should be considered in relation to human recreational activities adjacent to the Reservoir.

Skippers

Invertebrate diversity is an important and often overlooked component of the property's overall biodiversity. Butterflies can be useful indicators of environmental health because of their host plant specificity. Although there are no current records of skippers (butterflies in the family Herperiidae) on the Big Johnson Open Space, they have been documented in El Paso County. Based on caterpillar host plant information, there are at least three types of skippers that may inhabit the grasslands on Big Johnson Open Space. These include the dusted skipper (*Atrytonopsis bianna*), Ottoe skipper (*Hesperia ottoe*), and the crossline skipper (*Polites origenes*). The dusted skipper uses little bluestem and big bluestem as host plants. The Ottoe skipper and crossline skipper both use little bluestem and other grasses.

Cattle removal from the property will allow the grasses to recover. This will increase the probability that skippers will use the property for reproduction if they are not already doing so. If skippers are identified in the future, they would be an excellent indicator of grassland health. Management actions such as mowing and prescribed burning will need to account for seasonal needs of the skippers. Typically, skippers produce one brood between June and August (USGS 2000).

Domestic Pets

Domestic cats and dogs are known to pose a threat to wildlife. Cats have a significant impact on songbirds and small mammals. According to the FWS, cats kill over 60 million birds each year in the United States (USFWS 2000). Studies of the feeding habits of domestic, free-roaming cats show that approximately 60-70 percent of the wildlife cats kill are small mammals, 20-30 percent are birds, and up to 10 percent are amphibians, reptiles, and insects (American Bird Conservancy 2001). Dogs can also have a large impact on the environment due to their excrement. Dog feces adds excessive amounts of nitrogen to the soil, thereby increasing the spread of nitrogen-loving noxious weeds and their competitive advantage over native plants. The excrement also spreads parasites and bacteria that can affect plant and animal species on the property (Boulder 2002).

Human Tolerant Predator Species

The future residential and commercial developments surrounding parts of Big Johnson Open Space will encourage the proliferation of human tolerant species such as striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), and red fox (*Vulpes fulva*). These species adapt well to urbanized environments and often survive by consuming domestic garbage. As these species grow in number, populations of less human tolerant species may potentially decline.

Threatened, Endangered, and Candidate Species

Passed in 1973 and reauthorized in 1988, the Endangered Species Act (ESA) regulates a wide range of activities affecting plants and animals designated as endangered or threatened. By definition, “endangered species” is any animal or plant listed by regulation as being in danger of extinction. A “threatened species” is any animal or plant that is likely to become endangered within the foreseeable future. A “candidate species” is a any animal or plant for which reliable information is available that a listing under the ESA may be warranted. There are no mandatory Federal protections required under the ESA for a candidate species; however, it is advisable to voluntarily protect these species. The Act prohibits a number of activities involving endangered species. Big Johnson Open Space contains a small colony of black-tailed prairie dogs (approximately 160 individuals) in the southeast corner of the property. According to historic aerial photos of the Big Johnson Open Space, the prairie dog colony on the property originated around 1990 and has not changed significantly over the last 12 years.

Black-tailed prairie dog

Currently, the black-tailed prairie dog is a candidate species eligible to be listed as threatened. In 1998, the U.S. Fish and Wildlife Service (FWS) received a petition from the National Wildlife Federation to list the black-tailed prairie dog as a threatened species under the ESA. In the February 4, 2000 Federal Register, FWS announced that listing the black-tailed prairie dog under the ESA is warranted but precluded by other higher priority actions. This resulted in the black-tailed prairie dog being established as a candidate species. The status of this species will be re-evaluated annually by the FWS, and the prairie dog may be listed as a threatened species in the future.

Because agriculture and development pressures along the Front Range continue to displace black-tailed prairie dogs, open space preserves with appropriate habitat become increasingly important for preserving viable colonies. Not only is it important to preserve prairie dogs because of their candidacy status, they are also an important component of the grassland ecosystem. Species such as burrowing owl (*Speotyto cunicularia*), prairie rattlesnake (*Crotalus viridis*) and mountain plover (*Charadrius montanus*) use prairie dog colonies for food, cover, or

both. Prairie dogs also provide an important prey resource for predators including badger (*Taxidea taxus*), coyote (*Canis latrans*), bald eagle (*Haliaeetus leucocephalus*), ferruginous hawk (*Buteo regalis*) and other raptors.

The prairie dog colony should remain separate and buffered from the footpath proposed along the edge of the property bordering the Big Johnson Reservoir. According to the U.S. Fish & Wildlife Service, plague can be transmitted between humans and animals by direct contact such as coughing or sneezing. Black-tailed prairie dogs are susceptible to sylvatic plague that is carried by fleas. However, the chance of humans contracting the disease from prairie dog fleas is extremely low because very few fleas are infected and physical contact is necessary to spread the disease. Since 1959, the U.S. Centers for Disease Control and Prevention (CDC) have recorded and identified 240 cases of plague in humans. Only two of those cases were attributable to black-tailed prairie dogs and resulted from handling the animals. Various methods, such as visual barriers that use Griffolyn®, exist to control prairie dog populations and create buffers between them and recreational visitors.

Mountain plover

The mountain plover is a federal candidate species that inhabits dry tablelands and the Colorado Plateau. The plover is expected to be listed as threatened in the near future. This species nests primarily in shortgrass prairie sites used historically by prairie dogs, bison, and pronghorn. This species breeds from northern Montana, Wyoming, and Colorado to central New Mexico. The wintering range extends from central California to southern Arizona into northern Mexico. The mountain plover's habitat requirements generally consist of open, flat tablelands and short, intensively grazed grasslands. Typically plovers nest in areas with at least 30 percent bare ground and are often found in disturbed habitats, burned prairie, fallow agricultural fields, and prairie dog colonies (Knopf 1996). This species avoids hillsides and vegetation over 6 inches tall. Active mountain plover nests should be buffered to ¼ mile. During the nesting period, plovers are sensitive to pedestrian foot traffic and continual equipment operations (USFWS 2002). Although no mountain plovers have been observed on Big Johnson Open Space to date, there is sufficient habitat and conditions to warrant further study.

Burrowing owl

The burrowing owl is a small migratory owl that occupies prairie dog towns in Colorado during the summer breeding season. The owl is active during the day and uses abandoned prairie dog burrows for nesting and roosting. Although not a threatened or endangered species, federal and state laws, including the Migratory Bird Treaty Act prohibit the killing of burrowing owls. Burrowing owls are present in Colorado between March 1 and October 31. Future development activities (e.g., trail construction) could potentially affect the burrowing

owl if it is discovered on the property. Although no burrowing owls have been observed on Big Johnson Open Space to date, there is sufficient habitat and conditions to warrant further study.

Preble's meadow jumping mouse and Ute ladies'-tresses orchid

Because the drainage on the property is intermittent with no wetlands, habitat for two threatened species that are found along the Front Range—Preble's meadow jumping mouse (*Zapus hudsonius preblei*) and Ute ladies'-tresses orchid (*Spiranthes diluvialis*) does not exist on the property.

Goal

Protect wildlife habitat and movement corridors.

Objective

1. Inventory wildlife populations that use the property and monitor changes in their frequency, distribution, and behavior.
2. Protect or enhance important wildlife habitat on the property.
3. Coordinate grassland management with sensitive breeding periods for wildlife.
4. Foster partnerships with Fountain Mutual Irrigation Company and Colorado Springs Utilities to protect shorebirds.
5. Coordinate wildlife surveys and habitat conservation projects with neighboring landowners and other resource management agencies and organizations.

Management Action Recommendations

Objective 1: Inventory wildlife populations that use the property and monitor changes in their frequency, distribution, and behavior.

Action: Coordinate wildlife surveys and studies with other agencies to share information and efforts.

Action: Integrate sensitive wildlife habitat in all management actions (e.g., footpath design and construction).

Action: Survey the barn on the property for presence of great horned owl or pellets.

Action: Conduct a survey for the mountain plover between May 1 and June 15 of 2002.

Action: Conduct a burrowing owl survey in 2002.

Action: Conduct a survey for skippers as an indicator for grassland health.

Objective 2: Protect and enhance important wildlife habitat on the property.

Action: Identify wildlife enhancement needs and opportunities.

Action: Restore native plant communities through proper grassland management.

Action: Maintain a buffer of 1/3 mile around the red-tailed hawk nest located in the cottonwood north of the reservoir from March 1 to July 15. No major disturbance should be allowed within this buffer with the exception of a footpath.

Action: Encourage BMPs associated with dredging the reservoir to minimize wildlife disturbance.

Action: Consider management tools such as fencing, signage, or footpath closure to reduce interaction between the black-tailed prairie dog colony and visitors.

Action: Remain aware of U.S. Fish and Wildlife Service regulations regarding the possible listing of the black-tailed prairie dog and mountain plover as a federally protected species.

Objective 3: Coordinate grassland management with sensitive breeding periods for wildlife.

Action: Avoid disturbance (burning, mowing, grazing, and chemical spraying) during the nesting season for grassland birds.

Action: Spray weeds on a spot-by-spot basis, and delay spraying until after the peak nesting season for grassland birds.

Objective 4: Foster partnerships with Fountain Mutual Irrigation Company and Colorado Springs Utilities to protect shorebirds.

Action: Maintain fluctuating water levels to allow for continuous availability of food resources throughout migratory periods for different shorebird species.

Action: Consider all management actions on upland habitats in association with reservoir shore habitat use.

Objective 5: Coordinate wildlife management and habitat conservation projects with neighboring landowners and other resource management agencies.

Action: Conduct outreach activities with landowners that address the potential conflict between domestic pets and wildlife, as well as restrictions on domestic pets on adjacent development. Outreach activities would be educational in nature, and could include recommendations such as keeping domestic pets inside or in a fenced area, and de-clawing cats. Dogs should be prohibited on the property.

Action: Continue discussions with adjacent landowners regarding conservation and trail easements.

Monitoring

Action: Monitor the legal status of the black-tailed prairie dog.

Action: Monitor for the presence of burrowing owls and mountain plover in or around the prairie dog colony.

Action: Monitor the status and condition of the red-tailed hawk nest or other raptor nests.

Action: Survey the property for signs of predation by domestic pets.

Action: Track the results of annual bird surveys at the Big Johnson Reservoir (e.g., International Shorebird Surveys and Christmas Bird Count).

HISTORIC AND CULTURAL RESOURCES

The Big Johnson Open Space is also an important resource from the standpoint of its historical use. It was once part of the larger Banning-Lewis Ranch and used for grazing purposes. The history of ranching and cattle grazing defines much of the American West. The original homesteaders that came to this region were farmers, and relied upon the soils and grasslands to survive. Historical ranching and grazing practices on and around the present day Big Johnson Open Space would be an interesting interpretive theme to develop within a broader environmental education plan.

Goal

Provide quality educational experiences through interpretive programs.

Objectives

1. Present and interpret cultural and historical resources.

Management Action Recommendations

Objective 1: Present and interpret cultural and historical resources.

Action: Develop an interpretive plan for the property that considers significant cultural and historical features such as ranching and grazing.

Action: Collaborate with appropriate parties in the development of an interpretive plan that considers historical irrigation as it relates to the Big Johnson reservoir.

Monitoring

There are no recommended monitoring actions for historic and cultural resources on the Big Johnson Open Space. Monitoring recommendations may change based on future information.

VISITOR USE

As the City's first open space acquisition in a grassland area, Big Johnson Open Space is a unique community resource. The property provides scenic views and outstanding birding opportunities that already attract an estimated 300 to 500 visitors annually (Lieber 2002). Birders from across Colorado have conducted Christmas Bird Counts and walking tours on the property for a number of years. The Fountain Valley School uses the property for a variety of environmental education activities including grass and bird identification, native prairie investigations, and wildlife observation. URS (2000) estimates that upon completion, the Waterview development located northwest of Big Johnson Open Space, will add nearly 5,000 residents to the area. It is likely that a significant percentage of these new residents will use the Big Johnson Open Space as a recreational resource. Even if only 10 percent of these new residents use the property for recreation, it will represent a twofold increase in visitor use.

The goal of this section is to lay a conceptual foundation for a high quality and rewarding visitor experience while protecting sensitive natural and visual resources. Following the guidelines set forth in the TOPS ordinance, the Big Johnson Open Space will provide passive recreation and environmental education opportunities. These may include such activities as hiking, self-guided walking tours, nature studies, and photography.

Currently, visitor use opportunities on Big Johnson Open Space center on birdwatching and nature studies. These uses often follow existing roadbeds and cattle trails. A conceptual plan for trails and facilities that considers historical, present, and future uses was developed as part of this Management Plan (Figure 3). The conceptual trails and facilities plan—

- Uses existing roadbeds and cattle trails on the property
- Provides views of the Big Johnson Reservoir
- Locates parking and visitor facilities in already disturbed areas adjacent to Goldfield Road.
- Protects sensitive natural resources

The designated trail system as depicted in Figure 3 should be considered provisional as trail locations may change in order to create more sustainable routes.

Goal

Provide passive recreational and environmental education opportunities that do not affect the conservation values of the property.

Objectives

1. Provide appropriate recreation and interpretive facilities.

2. Preserve scenic values of the property.
3. Discourage vandalism and other undesirable impacts to the property.
4. Provide quality educational experiences through interpretive programs.
5. Promote visitor stewardship of resources.
6. Minimize conflicts with recreational users.
7. Discourage trespassing on adjacent properties.

Management Action Recommendations

Objective 1: Provide appropriate recreation and interpretive facilities.

Action: Establish a footpath near the perimeter of the reservoir property (see Figure 3) and use a single-track backcountry style standard.

Action: Install wooden posts along the footpath (every 500 feet) to prevent social trails and trespass.

Action: Construct a parking lot and trailhead (see Figure 3). It is recommended that the parking lot be constructed with a maximum limit of 20 vehicles.

Action: Remove existing outbuildings (after surveying for great horned owls) and windmill prior to or after the seasonal restriction for the red-tailed hawk (March 1 to July 15). Cap existing wells.

Action: Construct Powers Trail (Tier 2) and Cruse Gulch connection.

Objective 2: Preserve scenic values of the property.

Action: Use existing roadbed and cattle trails for trail design as appropriate. Using existing disturbed areas reduces the ecological “footprint” on the property and preserves the scenic views.

Action: Design parking lot and visitor facilities to minimize the visual impact to the property.

Objective 3: Discourage vandalism and other undesirable impacts to the property.

Action: Make arrangements for law enforcement to drive by the property on a regular basis during both day and night.

Action: Construct signs out of materials that are resistant to vandalism or can be replaced easily.

Action: Consider creating a neighborhood watch group as development on adjacent land increases.

Figure 3. Conceptual Trails and Facilities

Objective 4: Provide quality educational experiences through interpretive programs.

Action: Develop an interpretive program guided by a series of themes associated with Big Johnson Open Space.

Action: Work with nearby schools such as Fountain Valley School and the Colorado College to develop effective environmental education materials.

Objective 5: Promote visitor stewardship of resources.

Action: Work with neighboring landowners to minimize negative impacts to native fauna from domestic pets using educational materials and public outreach.

Action: Work with neighboring landowners to minimize negative impacts to flora from landscaping activities using educational materials and public outreach.

Action: Install appropriate signage and fencing as needed to deter trespass onto adjacent properties.

Objective 6: Minimize conflicts with recreational users.

Action: Promote trail etiquette through educational programs, signs, brochures, outreach with user groups, field contacts, and volunteer programs.

Action: Encourage use of designated trail and access points. Use large signs, trail maps, and educational materials to encourage appropriate visitor use.

Objective 7: Discourage trespassing on adjacent properties.

Action: Install signage at the trailhead and along the footpath prohibiting trespass on adjacent properties.

Action: Consider fencing as a tool to deter trespass.

Monitoring

Action: Monitor new residential development adjacent to Big Johnson Open Space and designate appropriate access points and trails.

Action: Monitor existing access points for problems such as social trails, parking along roadsides, capacity at facilities, and vandalism. Take appropriate action to mitigate these problems.

Action: Monitor visitor use and evaluate recreational impacts to vegetation, wildlife, and visual resources.

Action: Track visitor use and the number of visitors using observational visitation surveys and visitor intercept surveys (see *Appendix B*).

VISUAL RESOURCES

The *Existing Conditions Report* identified the scenic value of Big Johnson Open Space as one of the important conservation values. Beyond the outstanding views to Pikes Peak and the Front Range, the property provides a critical community separator between Fountain, Security, and Colorado Springs. The property provides a buffer that ensures the unique identity of each city is preserved. As future development proceeds in this area, the Big Johnson Open Space will provide an important gateway into the greater Colorado Springs community.



El Paso County and Colorado Springs may want to consider incorporating an “overlay zone” into the current zoning of the nearby properties to mitigate the potential impacts of future development on the scenic value of Big Johnson. The overlay zone would create a virtual layer on top of the existing zoning so that new changes could be incorporated without changing the underlying zoning category. Overlay zones have been used to protect native vegetation in sensitive areas and to require special development standards in wildfire hazard areas. An overlay zone in this case could set design standards in order to preserve the scenic value and community separator of Big Johnson Open Space.

Goal

Preserve and protect the open space and the scenic value of the property.

Objectives

1. Encourage appropriate design standards and guidelines for developments on neighboring properties adjacent to Big Johnson Open Space.
2. Consider visual impacts of all facilities and uses on Big Johnson Open Space.

Management Recommendations

Objective 1: Encourage appropriate design standards and guidelines for developments on neighboring properties adjacent to Big Johnson Open Space.

Action: Consider incentives for appropriate design standards and guidelines (e.g., building height, using native vegetation as a visual barrier).

Objective 2: Consider visual impacts of all facilities and uses on Big Johnson Open Space.

Action: Consider the visual impact in the placement of all trails, roads, and facilities.

Action: Develop and follow design standards for facilities on open space.

Monitoring

Action: Conduct a periodic assessment and photo-documentation of viewshed from assorted vantage points.

Action: Monitor adjacent development activity during build out.

MANAGEMENT ZONES

Achieving the balance between resource protection and visitor use is a difficult task. Management zones that describe the emphasis of use of Big Johnson Open Space have been developed as part of this Management Plan. They distinguish between areas more suitable for resource protection and areas more suitable for visitor use. Significant factors influencing the management zones include:

- Protecting sensitive grasslands and wildlife habitat.
- Protecting the scenic values of Big Johnson Open Space.
- The present and future location of infrastructure.
- The location of historical ranch roads and cattle trails.
- The future presence of regional trails such as Jimmy Camp Trail, Cruse Gulch Trail, and Powers Trail.

Sensitive Natural Resources Zone

The Sensitive Natural Resources Zone includes the majority of the property because of the high-quality grasslands, the prairie dog colony, potential presence of the mountain plover and burrowing owl, pronghorn, and the red-tailed hawk nest north of the reservoir. Recreation should be prohibited or seasonal closures enforced in this zone. Environmental education activities should be limited. Given the complexity of the Big Johnson Open Space, ERO prioritized individual natural resources within this management zone. The prioritized list is designed to guide the Parks, Recreation, and Cultural Services Department in their maintenance and stewardship of the property.

Table 2. Individual resources and management priority within Sensitive Natural Resources Zone.

NATURAL RESOURCE	PRIORITY
High-quality Grassland	Highest
Prairie dog colony	High
Potential presence of mountain plover	Highest
Potential presence of burrowing owl	Highest
Pronghorn	Medium
Red-tailed hawk nest	High

Outreach Zone

The Outreach Zone encompasses the entire Big Johnson Open Space and areas surrounding the property. Outreach and education should not be confined to this zone, but rather concentrated in the immediate area. Fountain Valley School, future residents of the Cygnet property, and Widefield residents should be contacted regarding management issues that directly affect Big Johnson Open Space (e.g., social trails, dumping, domestic pets, and noxious weed management).

Figure 4. Management Zones

PLAN IMPLEMENTATION

Implementing the Plan will require identification and prioritization of management actions to accomplish management objectives and plan goals. These prioritized management actions should be reviewed on an annual basis to determine annual work programs given budget and staff constraints. Implementation of the Plan also needs to be balanced with other resource needs throughout the open space system. Many of the management actions will be implemented within the first few years of approval of the Plan, while others will take many years to accomplish. Some management actions are ongoing, some are short term, and others are long term, representing considerable investments of time and energy.

Table 3 is a prioritized summary of management actions. The summary is derived from all the individual resource goals, objectives, and recommended management actions in the body of the Plan. For organizational purposes, the table is arranged by individual resource section. Column one summarizes the management goals, objectives, and recommended actions. The second column describes timing or how long it will take to accomplish an action—

- **Short-term actions (S)** should take less than one year to accomplish.
- **Long-term actions (L)** will take more than one year once they have been started.
- **Ongoing actions (O)** may involve considerable time and energy and will continue over time.

The third column prioritizes specific management actions. Management actions have been evaluated and prioritized according to “high,” “medium,” and “low” in Table 2. Criteria for prioritization include the urgency, importance, and relationship of each action to other resource goals, objectives, and actions. Other considerations include community need, legal requirements, budget, and personnel.

- **High priority actions (1)** should be accomplished first. These management actions are considered extremely important to the protection of the conservation values of Big Johnson Open Space. High priority actions are directly related to the accomplishment of other resource objectives and goals.
- **Medium priority actions (2)** are considered important, but not urgent, and meet a combination of other resource goals and objectives.
- **Low priority actions (3)** management actions are important, but not critical to resource protection needs. Low priority management actions do not have to be completed in the immediate future and primarily fulfill a specific resource goal or objective.

Table 3. Summary of Management Recommendations

MANAGEMENT GOALS, OBJECTIVES, AND ACTIONS	TIMING	PRIORITY
Vegetation Goal: <i>Protect and enhance native vegetation and restore degraded plant communities on the property.</i>		
Objective 1: Implement a grassland preservation and management strategy		
<ul style="list-style-type: none"> <i>Action:</i> Use a no action approach in the short term (2002-2004). 	S	1
<ul style="list-style-type: none"> <i>Action:</i> Coordinate with NRCS to conduct a resource inventory in late summer 2003. 	S	1
<ul style="list-style-type: none"> <i>Action:</i> Treat (burn, graze, or mow) portions of large areas on a rotational schedule to provide a mosaic of successional stages. 	O	1
<ul style="list-style-type: none"> <i>Action:</i> Conduct prescribed burns at varying intervals of time (2-3 years, 4-7 years, or 8-10 years) to provide a mosaic of successional stages. 	O	1
<ul style="list-style-type: none"> <i>Action:</i> Map noxious weeds infestations on Big Johnson Open Space and identify areas of concern on adjacent properties. 	O	1
<ul style="list-style-type: none"> <i>Action:</i> Work with El Paso County Department of Transportation to clarify Best Management Practices (BMPs) prior to any action on the Bradley Road extension. 	L	3
Objective 2: Plan trails to minimize the risk of weed introduction and spread, and habitat loss.		
<ul style="list-style-type: none"> <i>Action:</i> Do not place new trails in areas with existing weed infestations. 	O	2
<ul style="list-style-type: none"> <i>Action:</i> Avoid creating a trail corridor that links a weed-infested area with an area of little or no weed infestation. 	O	2
<ul style="list-style-type: none"> <i>Action:</i> Place any trails near grassland edges to limit the fragmentation of large blocks of habitat 	O	1
Objective 3: Implement trail construction and maintenance with a weed strategy in mind.		
<ul style="list-style-type: none"> <i>Action:</i> Reclaim disturbed areas immediately to reduce chance of weed infestation. 	S	2
<ul style="list-style-type: none"> <i>Action:</i> Minimize ground disturbance and soil compaction resulting from construction and maintenance activities. 	O	2
<ul style="list-style-type: none"> <i>Action:</i> Use weed-free materials in trail construction and maintenance. 	O	1
<ul style="list-style-type: none"> <i>Action:</i> Clean all equipment used in trail construction and maintenance before it is used on a new project. 	O	1
S: Short-term; L: Long-term; O: Ongoing; 1: High priority; 2: Medium priority; 3: Low priority		

Objective 4: Educate staff, landowners, and visitors about grassland preservation and noxious weed control.		
• <i>Action:</i> Develop outreach program to assist developers and homeowners with appropriate native landscaping.	O	3
• <i>Action:</i> Explore research opportunities in grassland preservation with schools such as the Colorado College and the Fountain Valley School.	O	3
Wildlife Goal: <i>Protect wildlife habitat and movement corridors.</i>		
Objective 1: Inventory wildlife populations that use the property and monitor changes in their frequency, distribution, and behavior.		
• <i>Action:</i> Coordinate wildlife surveys and studies with other agencies to share information and efforts.	O	2
• <i>Action:</i> Integrate sensitive wildlife habitat in all management actions (e.g., footpath design and construction).	O	1
• <i>Action:</i> Survey the barn on the property for presence of great horned owl or pellets.	S	1
• <i>Action:</i> Conduct a survey for the mountain plover between May 1 and June 15 of 2003.	S	1
• <i>Action:</i> Conduct a burrowing owl survey in 2003.	S	1
• <i>Action:</i> Conduct a survey for skippers as an indicator for grassland health.	L	2
Objective 2: Protect or enhance important wildlife habitat on the property.		
• <i>Action:</i> Identify wildlife enhancement needs and opportunities.	O	3
• <i>Action:</i> Restore native plant communities through proper grassland management.	O	2
• <i>Action:</i> Maintain a buffer of 1/3 mile around the red-tailed hawk nest located in the cottonwood north of the reservoir from March 1 to July 15. No major disturbance should be allowed within this buffer with the exception of a footpath.	O	2
• <i>Action:</i> Encourage BMPs associated with dredging the reservoir to minimize wildlife disturbance.	L	3
• <i>Action:</i> Consider management tools such as fencing, signage, or footpath closure to reduce interaction between the black-tailed prairie dog colony and visitors.	O	2
S: Short-term; L: Long-term; O: Ongoing; 1: High priority; 2: Medium priority; 3: Low priority		

<ul style="list-style-type: none"> <i>Action:</i> Remain aware of U.S. Fish and Wildlife Service regulations regarding the possible listing of the black-tailed prairie dog and mountain plover as a federally threatened species. 	O	3
Objective 3: Coordinate grassland management with sensitive breeding periods for wildlife.		
<ul style="list-style-type: none"> <i>Action:</i> Avoid disturbance (burning, mowing, grazing, and chemical spraying) during the breeding season for grassland birds. 	O	1
<ul style="list-style-type: none"> <i>Action:</i> Spray weeds on a spot-by-spot basis, and delay spraying until after the peak breeding season for grassland birds. 	O	1
Objective 4: Foster partnerships with Fountain Mutual Irrigation Company and Colorado Springs Utilities to protect shorebirds.		
<ul style="list-style-type: none"> <i>Action:</i> Maintain fluctuating water levels to allow for continuous availability of food resources throughout migratory periods for different shorebird species. 	O	1
<ul style="list-style-type: none"> <i>Action:</i> Consider all management actions on upland habitats in association with reservoir shore habitat use. 	O	1
Objective 5: Coordinate wildlife management and habitat conservation projects with neighboring landowners and other resource management agencies.		
<ul style="list-style-type: none"> <i>Action:</i> Conduct outreach activities with landowners that address the potential conflict between domestic pets and wildlife, as well as restrictions on domestic pets on adjacent development. Outreach activities would be educational in nature, and could include recommendations such as keeping domestic pets inside or in a fenced area, and de-clawing cats. Dogs should be prohibited on the property. 	O	2
<ul style="list-style-type: none"> <i>Action:</i> Continue discussions with adjacent landowners regarding conservation and trail easements. 	L	1
S: Short-term; L: Long-term; O: Ongoing; 1: High priority; 2: Medium priority; 3: Low priority		

<p>Historical and Cultural Resources Goal:</p> <p><i>Provide quality educational experiences through interpretive programs.</i></p>		
Objective 1: Present and interpret cultural and historical resources.		
<ul style="list-style-type: none"> <i>Action:</i> Develop an interpretive plan for the property that considers significant cultural and historical features such as ranching and grazing. 	L	3
<ul style="list-style-type: none"> <i>Action:</i> Collaborate with appropriate parties in the development of an interpretive plan that considers historical irrigation as it relates to the Big Johnson reservoir. 	L	3
<p>Visitor Use Goal:</p> <p><i>Provide passive recreational and environmental education opportunities that do not affect the conservation values of the property.</i></p>		
Objective 1: Provide appropriate recreation and interpretive facilities.		
<ul style="list-style-type: none"> <i>Action:</i> Establish a footpath near the perimeter of the reservoir property (see Figure 3) and use a single-track backcountry style standard. 	S	1
<ul style="list-style-type: none"> <i>Action:</i> Install wooden posts along the footpath (every 500 feet) to prevent social trails and trespass. 	S	1
<ul style="list-style-type: none"> <i>Action:</i> Construct a parking lot and trailhead (see Figure 3). It is recommended that the parking lot be constructed with a maximum limit of 20 vehicles. 	S	1
<ul style="list-style-type: none"> <i>Action:</i> Remove existing outbuildings (after surveying for great horned owls) and windmill prior to or after the seasonal restriction for the red-tailed hawk (March 1 to July 15). Cap existing wells. 	S	1
<ul style="list-style-type: none"> <i>Action:</i> Construct Powers Trail (Tier 2) and Cruse Gulch connection. 	L	2
Objective 2: Preserve scenic values of the property.		
<ul style="list-style-type: none"> <i>Action:</i> Use existing roadbed and cattle trails for trail design as appropriate. Using existing disturbed areas reduces the ecological “footprint” on the property and preserves the scenic views. 	S	2
<ul style="list-style-type: none"> <i>Action:</i> Design parking lot and visitor facilities to minimize the visual impact to the property. 	S	2
S: Short-term; L: Long-term; O: Ongoing; 1: High priority; 2: Medium priority; 3: Low priority		

Objective 3: Discourage vandalism and other undesirable impacts to the property.		
• <u>Action:</u> Make arrangements for law enforcement to drive by the property on a regular basis both during day and night.	O	2
• <u>Action:</u> Construct signs out of materials that are resistant to vandalism or can be replaced easily.	S	1
• <u>Action:</u> Consider creating a neighborhood watch group as development on adjacent land increases.	O	2
Objective 4: Provide quality educational experiences through interpretive programs.		
• <u>Action:</u> Develop an interpretive program guided by a series of themes associated with Big Johnson Open Space.	O	2
• <u>Action:</u> Work with nearby schools such as Fountain Valley School and the Colorado College to develop effective environmental education materials.	O	2
Objective 5: Promote visitor stewardship of resources.		
• <u>Action:</u> Work with neighboring landowners to minimize negative impacts to native fauna from domestic pets using educational materials and public outreach.	O	1
• <u>Action:</u> Work with neighboring landowners to minimize negative impacts to flora from landscaping activities using educational materials and public outreach.	O	1
• <u>Action:</u> Install appropriate signage and fencing as needed to deter trespass onto adjacent properties.	O	2
Objective 6: Minimize conflicts with recreational users.		
• <u>Action:</u> Promote trail etiquette through educational programs, signs, brochures, outreach with user groups, field contacts, and volunteer programs.	O	2
• <u>Action:</u> Encourage use of designated trail and access points. Use large signs, trail maps, and educational materials to encourage appropriate visitor use.	O	2
Objective 7: Discourage trespassing on adjacent properties.		
• <u>Action:</u> Install signage at the trailhead and along the footpath prohibiting trespass on adjacent properties.	S	1
• <u>Action:</u> Consider fencing as a tool to deter trespass.	S	1
S: Short-term; L: Long-term; O: Ongoing; 1: High priority; 2: Medium priority; 3: Low priority		

Visual Resources Goal: <i>Preserve and protect the open space and the scenic value of the property.</i>		
Objective 1: Encourage appropriate building design standards and guidelines for developments on neighboring properties adjacent to Big Johnson Open Space.		
<ul style="list-style-type: none"> <i>Action:</i> Consider incentives for appropriate design standards and guidelines (e.g., building height, using native vegetation as a visual barrier). 	L	3
Objective 2: Consider visual impacts of all facilities and uses on Big Johnson Open Space.		
<ul style="list-style-type: none"> <i>Action:</i> Consider the visual impact in the placement of all trails, roads, and facilities. 	O	2
<ul style="list-style-type: none"> <i>Action:</i> Develop and follow design standards for facilities on open space. 	O	2
S: Short-term; L: Long-term; O: Ongoing; 1: High priority; 2: Medium priority; 3: Low priority		

MONITORING

Resource monitoring is performed to determine how well management objectives and goals are being met. Monitoring becomes a key element in order to measure success and provides a feedback mechanism for decision-making that keeps the plan active and adaptive.

Monitoring provides information on what changes are occurring on the Big Johnson Open Space. Some resources may be adversely affected resulting in a change in management. Other resources may improve as a result of management activities. Monitoring (e.g., visitor use patterns, user conflicts, and the creation of social trails) should also influence access and recreation management. Techniques for monitoring the overall landscape include photo monitoring, vegetation and landscape mapping, and wildlife and field surveys.

A photo journal of the changing conditions over time is an inexpensive and easy way of monitoring. The process of photo monitoring includes regularly taking photographs from the same locations on the property to detect changes over time. The photo documentation, accompanying descriptions, and photo point map in Appendix A of the *Existing Conditions Report* should be used as an initial photo monitoring sequence. Comprehensive photo monitoring should occur again in mid to late summer of 2004, especially to track progress in grassland management and weed control. Specific monitoring actions are included within the individual sections under *Resource Management*.

The monitoring of specific resources should be performed on a periodic basis. Some monitoring actions are ongoing and occur through standard patrol activities. Others need to be scheduled several times a year (trail inspections), annually (prairie dog colony), or every five years (detailed weed mapping). Other monitoring may be triggered by particular events (fire) or management actions (large-scale herbicide applications). Table 4 is a summary of resource monitoring actions included in the Plan and a general resource-monitoring schedule including frequency and methods. A general monitoring report should be completed annually.

Table 4. Summary of Resource Monitoring Actions and General Monitoring Schedule.

MONITORING ACTIONS	FREQUENCY	HOW
Vegetation Monitoring		
<u>Action:</u> Photos should be taken of known weed infestations and compared annually to track success of control efforts.	Every 3 years	Photopoints
<u>Action:</u> Recreational trails should be surveyed for weed infestations.	Annually	Visual inspection

<u>Action:</u> Monitor thatch build-up for threat of wildfires (especially during short term).	Annually	Visual inspection
<u>Action:</u> Monitor soil compaction from mowing equipment.	Annually	Photopoints; Visual inspection
<u>Action:</u> Monitor use of cattle for impacts to ground nesting birds and as potential vectors for noxious weed dispersal.	Every three years	Visual inspection; Photopoints
<u>Action:</u> Closely monitor construction activities if Bradley Road is extended.	During construction	Visual inspection; Photopoints
<u>Action:</u> Closely monitor potential reservoir dredging for impacts to vegetation.	During dredging	Visual inspection; Photopoints
Wildlife Monitoring		
<u>Action:</u> Monitor the status of the black-tailed prairie dog.	Annually	Contact USFWS
<u>Action:</u> Monitor for the presence of burrowing owls and mountain plover in or around the prairie dog colony.	Annually	Visual inspection
<u>Action:</u> Monitor the status and condition of the red-tailed hawk nest or other raptor nests.	Annually	Visual inspection; Photopoints
<u>Action:</u> Survey the property for signs of predation by domestic pets.	Annually	Visual inspection; Photopoints
<u>Action:</u> Track the results of annual bird surveys at the Big Johnson Reservoir (e.g., International Shorebird Surveys and Christmas Bird Count).	Annually	Contact local Audobon chapter
Historic and Cultural Resources		
There are no recommended monitoring actions for historic and cultural resources on the Big Johnson Open Space. Monitoring recommendations may change based on future information provided by the OAHP.	Not applicable	Not applicable
Visitor Use Monitoring		
<u>Action:</u> Monitor new residential development adjacent to Big Johnson Open Space and designate appropriate access points and trails.	Every two years	Visual inspection; Mapping

<u><i>Action:</i></u> Monitor existing access points for problems such as social trails, parking along roadsides, capacity at facilities, and vandalism. Take appropriate action to mitigate these problems.	Annually	Visual inspection; Records of violation at County Sheriff
<u><i>Action:</i></u> Monitor visitor use and evaluate recreational impacts to vegetation, wildlife, and visual resources.	Annually	Visual inspection
<u><i>Action:</i></u> Track visitor use and the number of visitors using observational visitation surveys and visitor intercept surveys (see <i>Appendix B</i>).	Annually	Survey
Visual Resources Monitoring		
<u><i>Action:</i></u> Conduct a periodic assessment and photo-documentation of viewshed from assorted vantage points.	Every three years	Photopoints
<u><i>Action:</i></u> Monitor adjacent development activity during build out.	Annually	Visual inspection

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APPENDIX A: EXISTING CONDITIONS REPORT

(to be inserted at a later date)

APPENDIX B: VISITOR USE SURVEY TEMPLATES

BIG JOHNSON OPEN SPACE

INTERCEPT VISITATION SURVEY

Date: _____

Person: _____

Time: _____

Day of Week: _____

Season: _____

Weather: _____

Special Considerations:

SURVEY PROCEDURE:

- ◆ Select individual or party, approach party if possible.
- ◆ Tell them the survey will take only 3 minutes of their time.
- ◆ Provide a brief overview of what the City is doing. Give them a one-page fact sheet.
- ◆ Tell them how the information will be used for future management of the property.

OBSERVATIONAL VISITATION SURVEY

Person: _____

Day of Week: _____

Weather: _____

- ◆ How many vehicles are in the parking lot? _____
- ◆ If not in the parking lot, where are the people parked and how many are there?

- [illegible]

BIG JOHNSON OPEN SPACE—OBSERVATIONAL VISITATION SURVEY

Page 2

- ◆ Where are people located on the site? (mark the attached map)
- ◆ How many people are at the site? _____
- ◆ As specifically as possible, what is each person or group doing?

Additional Comments:

BIG JOHNSON OPEN SPACE—INTERCEPT VISITATION SURVEY

Page 2

- ◆ Group Size: _____
- ◆ Approximate Ages: _____
- ◆ Apparent Activities: _____

- Inquire about overall visitor satisfaction with the open space property.
- Where are you from?
- Why do you visit this open space property?
- Do you come here often? [specify frequency]
- How did you find out about Big Johnson Open Space?
- What do you like about it?
- What do you not like about it?
- What aspects of the property could be improved?
- Do they have any suggestions or comments?
